

The Museum of Science

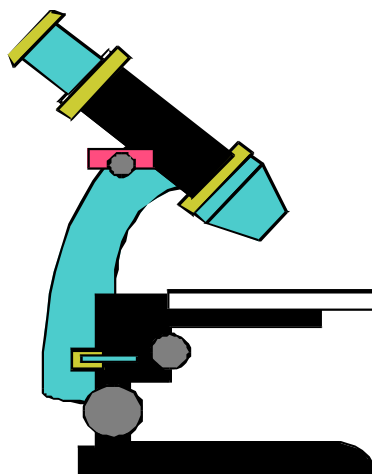
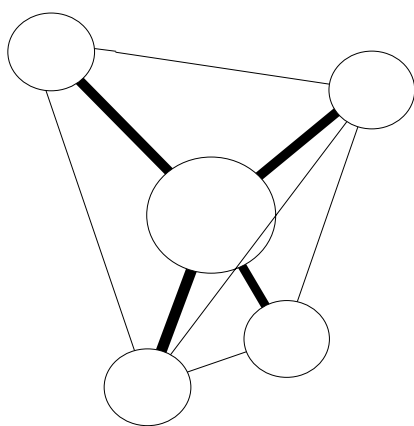
Middle Level

Science Performance Event

by

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South Central Regional MAP Center

The Museum of Science

Purpose: This performance event can be used as an assessment or culminating activity after a series of lessons dealing with the states of matter, the law of the conservation of matter, and the effects of heat and cold upon matter. The student will use a chart to plan a demonstration which addresses these concepts and uses a predetermined set of materials.

Show-Me Standards Addressed:

Knowledge: S1

Performance: 1.8, 1.3

Grade Level Range: 8-9

Subject Area: Science

Materials and Resources Needed: pencils, and Student Performance Event Packet which includes: Student Prompt, Demonstration Plan Sheet, and Scoring Guide.

Time Needed for Event: 45-55 minutes.

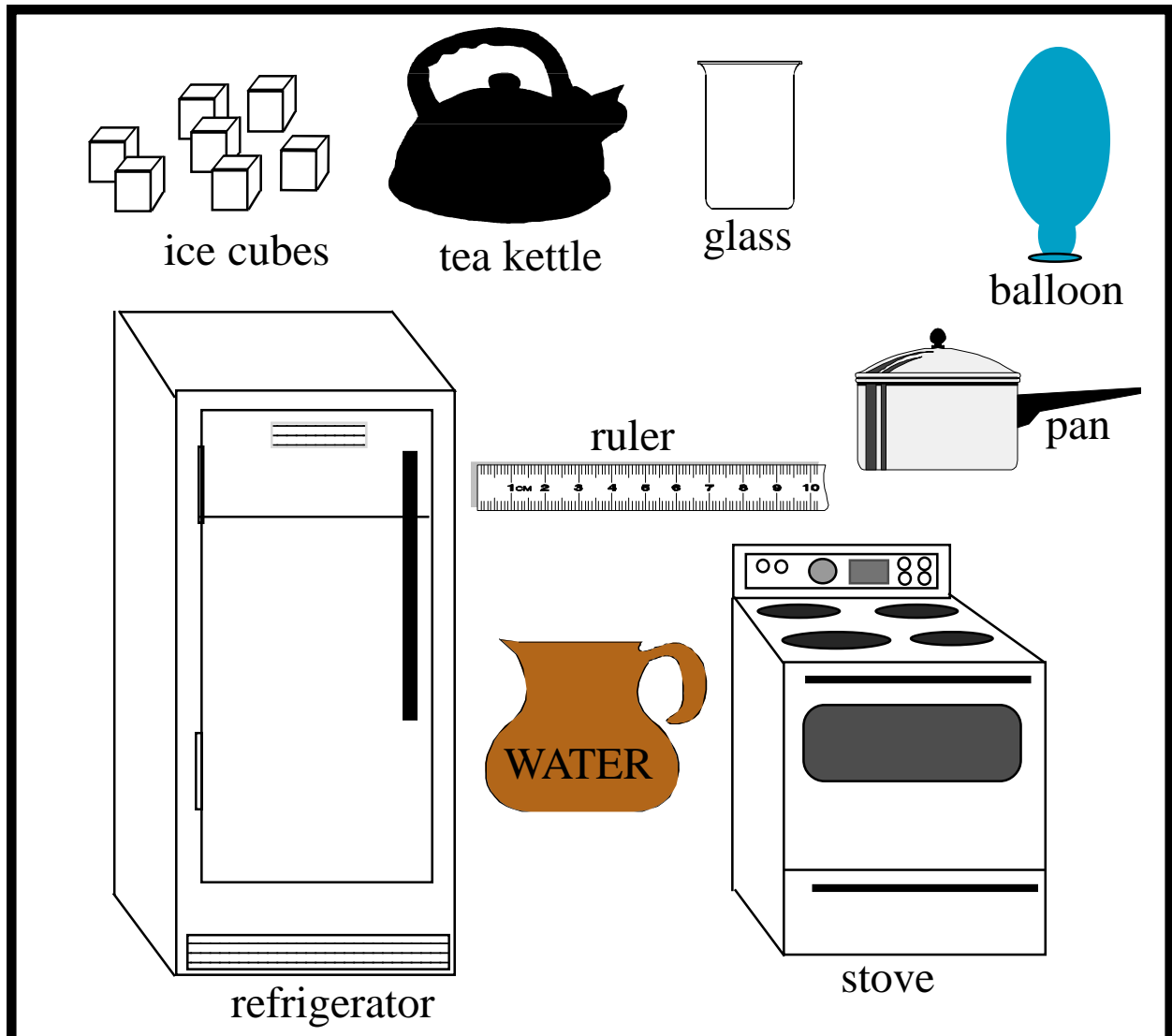
Administrators Instructions: Provide students with a Performance Event Packet and read the prompt to ensure the directions are clearly understood. Also go over the criteria to be assessed on the Scoring Guide so they understand how they will be assessed and what a quality response involves.

Pre-assessment Instructions: The students will have to have the prerequisite knowledge: the three states of matter (solid, liquid, and gas), that matter cannot be created nor destroyed but only changed, that matter expands when it is heated because the molecules get farther apart, and that matter contracts when it is cold because the molecules get closer together.

Student Prompt

You are a curator of the Science Museum who wants to develop a simple 30 minute demonstration for a group of 4th grade students. In your presentation, you want to address: the three states of matter, the fact that matter cannot be created nor destroyed but only changed, what happens to matter when it is heated or cooled, and why these changes occur.

You are working within a very limited budget and have at your disposal only the items shown in the box below. Keeping in mind you may use some or all of the items shown below and have only a short time period for your demonstration, create a written plan. Use the Demonstration Plan Sheet to write your plan.



[illegible]

Write the names of the materials you have chosen to use in your demonstration.

[illegible]

Museum of Science: Scoring Guide

4: Exemplary

*The response shows a complete accurate understanding of the three states of matter, that matter cannot be created nor destroyed but only changed, that heat causes matter to expand because the molecules get farther apart, and that cold causes matter to contract (See note below.) because the molecules get closer together.

*The plan for the demonstration uses some or all of the materials, is focused and has a clear sense of direction, follows a logical sequence, and addresses the required four points to be stressed.

*The chart is complete, accurate, easy to understand, and clearly communicates the process for the demonstration.

3: Sufficient

*The response shows sufficient understanding of the three states of matter, that matter cannot be created nor destroyed but only changed, that heat causes matter to expand because the molecules get farther apart, and that cold causes matter to contract (See note below.) because the molecules get closer together.

*The plan for the demonstration uses some or all of the materials, has an overall sense of direction but may loose focus at one point, or may contain a few minor errors. For the most part, the plan follows a logical sequence and addresses at least three of the required points to be stressed.

*The chart is complete and communicates the process for the demonstration but may be slightly difficult to understand at one or two points.

2: Emergent

*The response shows a partial understanding of the three states of matter, that matter cannot be created nor destroyed but only changed, that heat causes matter to expand because the molecules get farther apart, and that cold causes matter to contract (See note below.) because the molecules get closer together.

*The plan for the demonstration uses some or all of the materials, lacks a sense of direction and/or lacks a logical sequence. It may address one or two of the points to be stressed and/or may contain critical errors.

*The chart does not communicate the process for the demonstration. It may be incomplete or contain several critical errors.

1: Attempted

*The response shows little or no understanding of the three states of matter, that matter cannot be created nor destroyed but only changed, that heat causes matter to expand because the molecules get farther apart, and that cold causes matter to contract (See note below.) because the molecules get closer together.

*The plan for the demonstration and the chart show severe misconceptions and a severe lack of understanding of the major concepts needed to complete the task.

0: Off Task or No Attempt

NOTE: Water is unique in that it is the only substance that expands when frozen. However the student may still show that it contracts when allowed to cool at temperatures below freezing. Example: Hot water allowed to cool in a jar does contract.